

Agenda Item 7 - Merced-Fresno Supplemental AA Report

Executive Summary

This May 2011 Merced to Fresno Section Supplemental Alternatives Analysis (AA) Report updates the Preliminary AA Report that the California High-Speed Rail Authority (Authority) issued for the Merced to Fresno Section High-Speed Train (HST) Project in April 2010 and the subsequent Supplemental AA Report issued in August 2010.

This Supplemental AA Report was developed to present the engineering optimization resulting from a 15% level design refinement effort. The engineering revisions have led to reducing a number of potential impacts such as visual, noise, at-grade crossing safety improvements, and construction capital costs. These design optimizations were accomplished by:

- Setting Downtown Merced and Fresno stations and trackways to an at-grade profile.
- Optimizing the guideway profile to reduce the overall length of elevated structures (where feasible).

Per the previously submitted reports, three alternatives, BNSF (A1), UPRR/SR 99 (A2), and Hybrid, were selected to advance through the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) process:

- Alternative – BNSF (A1)
- Alternative – UPRR/SR 99 (A2)
- Alternative – Hybrid

Alternative Optimizations

Through the design refinement effort and iterative design optimization process, the HST guideway design for the Merced to Fresno Section was further optimized to reduce project impacts by lowering the profile grade of the elevated structures to at-grade where feasible, and consequently reduce the broad community impacts caused by the elevated profile – specifically noise and visual intrusion impacts. In working with the communities, the changes have also resulted in cost savings.

For the most part horizontal alignments of the three alternatives remained unchanged. Only the profiles were modified in specific locations. The changes resulted in:

- Downtown Merced and Fresno stations, where an at-grade station and approaching trackways were found to be feasible, with local street crossings
- Elevated structures on curve alignments, where recent design requirements allow for more efficient transition between elevated and at-grade sections

Downtown Merced Station

The revised at-grade Merced high-speed rail station is located in the southeast portion of Downtown Merced, adjacent to the UPRR railway corridor. The HST alignment through Downtown Merced remains parallel to the UPRR railroad corridor between the railroad right-of-way to the northeast and West 15th Street to the southwest. The at-grade alignment would terminate at Martin Luther King, Jr. Way, and the Merced HST at-grade station would be located in a three city block section between Martin Luther King, Jr. Way to the northwest and G Street to the southeast.

Downtown Fresno Station

In parallel with the optimization effort for the Merced to Fresno Section of the HST project, the Fresno to Bakersfield (FB) Section also considered similar measures to reduce impacts and construction costs for the FB alignment alternatives and the Downtown Fresno Station. There are two proposed station alternatives, both of which are at-grade with pedestrian overcrossings over the UPRR tracks as necessary to provide access to either side of Fresno. The station alternatives are located near Mariposa Street and Kern Street.

Profile Optimization from Elevated Structures to At-Grade

During the early preliminary engineering stages, in some cases, longer elevated HST profiles were conservatively used at the transitions to the curved alignments. As part of the design review process, more refined profile transitions were considered and found to be feasible. This will reduce visual and noise impacts, and will also reduce the capital cost for construction of the HST project. Shown in Figure 1, and summarized in Table 1 are the extents of this optimization effort to convert previously elevated structures to at-grade guideways, for all three alternatives.

Table 1 –Elevated Structure revision to at-grade

Alignment	Revised Elevated to At-grade
BNSF (A1)	9 to 10 miles
UPRR/SRR99 (A2)	9 miles
Hybrid	13 miles

Adjustments to Infrastructure

The revised design concepts have been developed in close coordination with the jurisdictions where the at-grade HST guideways might cause additional traffic circulation impacts. There are primarily two areas where roadway adjustments are necessary to accommodate the at-grade profile—Merced and south of the San Joaquin River to the Fresno station in north Fresno.

- In Merced, the current design eliminates at-grade crossing at G streets and provides a new 2- or 4-lane overcrossing over the UPRR and the HST to maintain G Street traffic. Additionally an at-grade crossing of UPRR at D Street will be closed and a new pedestrian bridge in the Vicinity of B Street will be considered.
- Traveling south of the San Joaquin River, the HST profile has been revised to become at-grade after Herndon Avenue to Fresno Station options. Total of eight existing at-grade crossings will be closed: Carnegie, Shaw, McKinley, W. Olive, Tulare, Kern, Mono, and Ventura.

Recommendations

The staff requests the Board to concur with the following recommendations:

Downtown Merced and Fresno Stations

- ✓ Carry forward at-grade stations
- × Do Not Carry forward elevated stations

Elevated Structures to At-Grade

- ✓ Carry forward profile optimization to reduce elevated structures and increase at-grade segments.

Figure 1 – Recommended Elevated to At-Grade Profile Revisions, Merced to Fresno Section

